

Technology Partnerships

Forging Partnerships Between Industry and National Laboratories

From the beginning, industry has participated in the Superconductivity Program for Electric Systems through cooperative agreements drawing on basic research at DOE's national laboratories. These agreements lower the risk and cost to industry, focusing research on areas that speed the development of the emerging HTS industry and offering long-term benefits of high-wage jobs and a strong position in the international marketplace.

To date, industry and the national laboratories have initiated over 90 collaborative projects, completing over 55. Most projects now active focus on developing HTS technology for wires and components. As HTS technology matures, future collaborations will include system development projects, with industry leading market focused activities and the national laboratories continuing to provide crucial support in basic research.

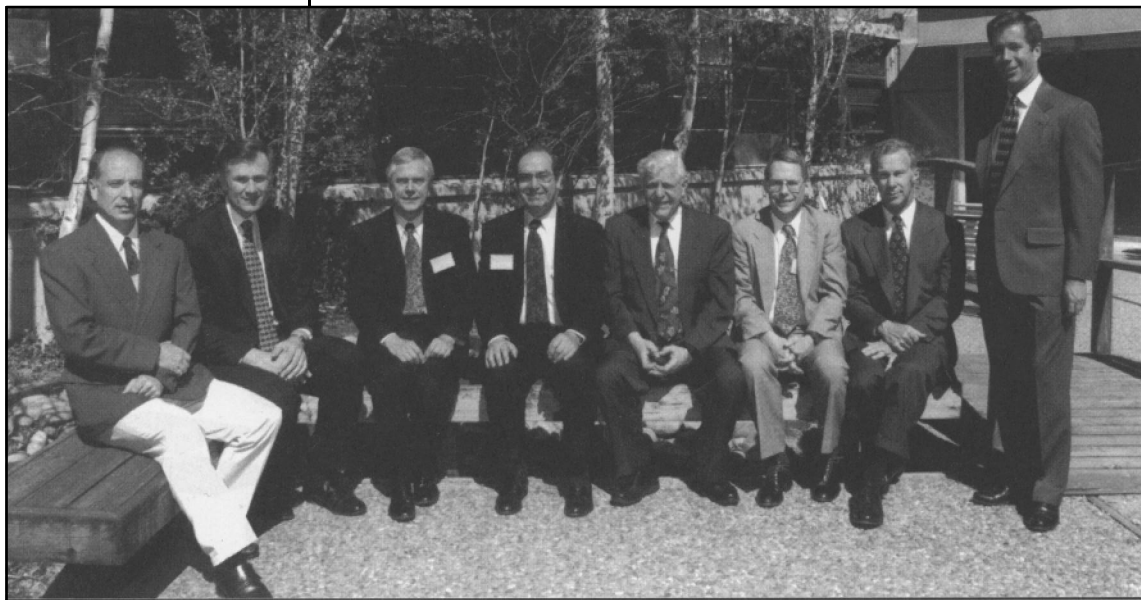
Dr. Pradeep Haldar,
Intermagetics General
Corporation

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Nineteen companies and 18 universities are currently partnered with six national laboratories to develop HTS wire and electric systems technology.

Matching industry funds to support collaborative activities account for roughly 50% of the program.

This funding leverage creates a program that strongly benefits from interaction among industrial, university, and government centers of excellence.



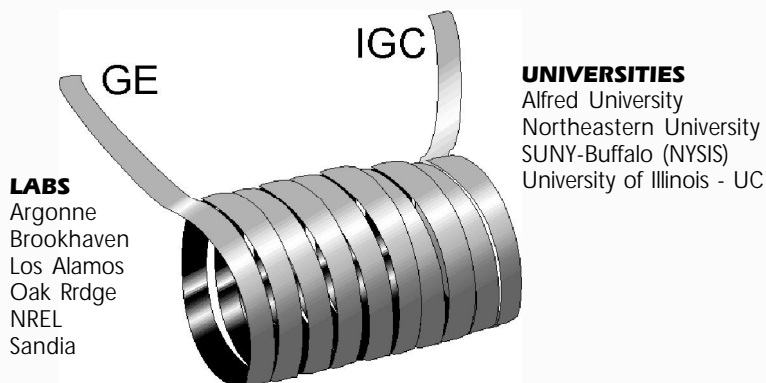
The Industrial Overview Committee for the Superconductivity Technology Centers

Industrial Overview Committee members biannually review national laboratory performance, results, and plans, providing valuable industry insight. Members (from left to right) : Al MacDonald, *Virginia Power*; Rex Roehl, *Commonwealth Edison Company*; Alan Lauder, *Dupont*; Carl Rosner, *Intermagetics General Corporation*; Pete Tsvitse, *Reliance Electric Corporation*; Sam Harkness, *Westinghouse Electric Corporation*; James Worth, *Oxford Instruments, Inc.*; Charles Lockerby, *American Superconductor Corporation*. Not Pictured: Greg Yurek, *American Superconductor Corporation*; Roger Bricknell, *General Electric Company*.

Program Partners Set the Pace in HTS Technology

Thallium Wire Working Group

Intermagetics General Corporation and General Electric lead a two-pronged effort to develop Thallium-based HTS wire.



Outstanding Results

- Two new superconductor powder products sold by Superconductive Components Inc., based on discoveries by Sandia, Oak Ridge and Argonne National Laboratories.

- A rapid, non-contact HTS screening system sold by Lakeshore Cryogenics, based on advancements made by Los Alamos National Laboratory.

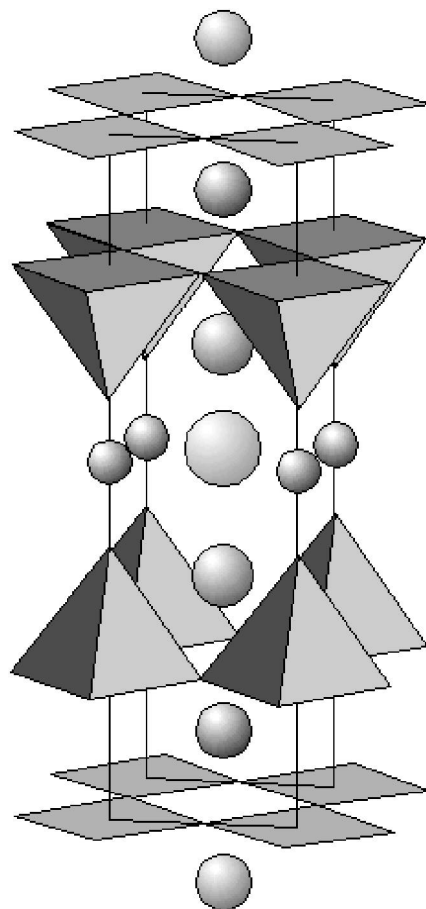
- An automated multilayer deposition system sold by Neocera, based on techniques developed at Oak Ridge National Laboratory.

Intermagetics General

One example of an outstanding success is the partnership between DOE and InterMagetics General Corporation (IGC), an established manufacturer of superconducting wire and devices. IGC credits the Superconductivity Program for Electric Systems with shortening their HTS wire and component research time by as much as two years through work with national laboratories. As an integral part of the program, they have demonstrated record properties in wires and magnets and expanded their product line to offer HTS materials and devices. They are participating in an industry-national lab team to develop the next generation of thallium-based HTS wires and components.

Achieving Extraordinary Results

When the program began in 1988, researchers were faced with the task of making long, ductile wire out of ceramic powder. Today, in large part due to collaborative efforts with national laboratories, industry is routinely manufacturing kilometer lengths of wire. As a result, the building of superconductor-based equipment needed by our electric utilities is well under way and gives the United States a strong position in the international race to develop HTS electric power systems.



A graphical representation of the complex and unusual layered atomic structure of HTS materials.